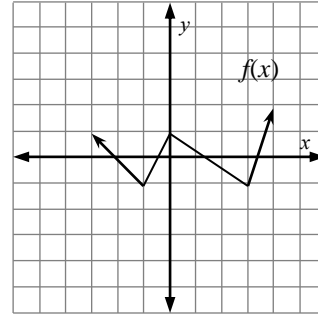


Chapter 3

Lesson 3.1.1 Horizontal and Vertical Stretches

1. Given $f(x)$ at right, sketch the following transformations.

a. $-2f(x)$ b. $f\left(\frac{1}{2}x\right)$



Lesson 3.1.2 Applications of Exponential Functions

1. Find the equation of the exponential function that passes through the points (1, 2) and (3, 18).

Lesson 3.1.3 Stretching Exponential Functions

1. Rewrite the given equation in $y = a \cdot b^x$ form. $y = 3(4)^{2x-1}$

2. Use the rules of exponents to express each side with the same base then solve.

• $16^x \cdot \left(\frac{1}{32}\right)^{2-x} = 8$

3. Simplify the following complex fractions.

• $\frac{\frac{x}{y^2} + \frac{1}{x}}{\frac{y}{x^2} + y^2}$

Lesson 3.2.1 Inverse Functions

1. Find the inverse of the given function. Is the inverse a function? $f(x) = \frac{5x}{2x-3}$
2. Find the inverse of the given function. Is the inverse a function? $f(x) = (2x+1)^{5/2} - 3$

Lesson 3.2.2 Logs as Inverse Exponentials

1. Rewrite as an exponential equation.

• $C = \log_V I$

2. Rewrite as a log equation.

. $5^{-2} = \frac{1}{25}$

3. Evaluate each log expression.

a. $\log_6 \left(\frac{1}{36} \right)$ b. $\log_{12} 1$

4. Simplify each log expression.

. $4 \log_3 27^x$

5. Solve each equation by rewriting each log equation as an exponential equation.

a. $\log_4 x = \frac{1}{2}$ b. $\log_x 16 = -4$

Lesson 3.2.3 Graphing Log Functions

1. Graph $f(x) = -\log_3(x + 2)$ and determine the domain and range.
2. Graph $f(x) = 3 \log_2 x + 1$ and determine the domain and range.

Lesson 3.3.1 Laws of Logarithms

1. Rewrite using a single logarithm.

. $\frac{1}{2} (\log M + \log N - \log P)$

2. Use the Laws of Logarithms to expand.

. $\log_m (ab^2\sqrt{c^3})$

4. Simplify.

. $2 \log_3(x - 2) + \log_3(x + 2) - \log_3(x^2 - 4)$

5. Solve.

$$\log_2 4 + \log_2 x = \log_2 5 + \log_2 (x - 2)$$

Lesson 3.3.2 Solving Exponential Equations

1. Solve.

$$200(1.5)^{x+2} = 700$$

2. Evaluate.

a. $\log_4 21$

b. $\log_5 32$

3. Solve.

$$3^{x+2} = 5^{2x}$$

4. Solve.

$$2(x)^{0.7} + 5 = 9$$

Previous Chapters Review Problems

1. Use your calculator to evaluate the given expression. Round to three decimal places.

$$\sqrt[6]{4327}$$

7. a. Convert 200° to radians.

b. Convert 5.5 radians to degrees.

8. Simplify.

$$\frac{\frac{1}{a} - \frac{1}{b}}{1 - \frac{1}{ab}}$$

9. Evaluate.

a. $25^{-3/2}$

10. Solve.

$$2x^2 - (x + 3) = 2(x + 1)$$